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Unbiasing the Measurement of Judgment Accuracy: A Hierarchical Extension of the Matching Parameter G of the Lens Model Equation

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Abstract

When making judgments in probabilistic environments, people are assumed to rely on available cues. Because neither judgments nor criteria are fully predictable from these cues, their correlation underestimates true judgment accuracy. The matching parameter G of the lens model equation was introduced as an attenuation-corrected measure and has been widely used across domains to assess cue-based judgment accuracy. However, building on early critiques, we show through simulation studies that the conventional matching parameter is unreliable and systematically biased, often underestimating matching—especially under noisy judgments or model misspecification. We therefore propose a hierarchical extension of the matching parameter that mitigates these biases through greater model flexibility and regularized estimation. Across simulations and reanalyses of seven empirical datasets, the hierarchical approach yields more valid and reliable estimates of cue matching. These results challenge prevailing conclusions drawn from the conventional approach and motivate the adoption of the hierarchical approach in future research.